

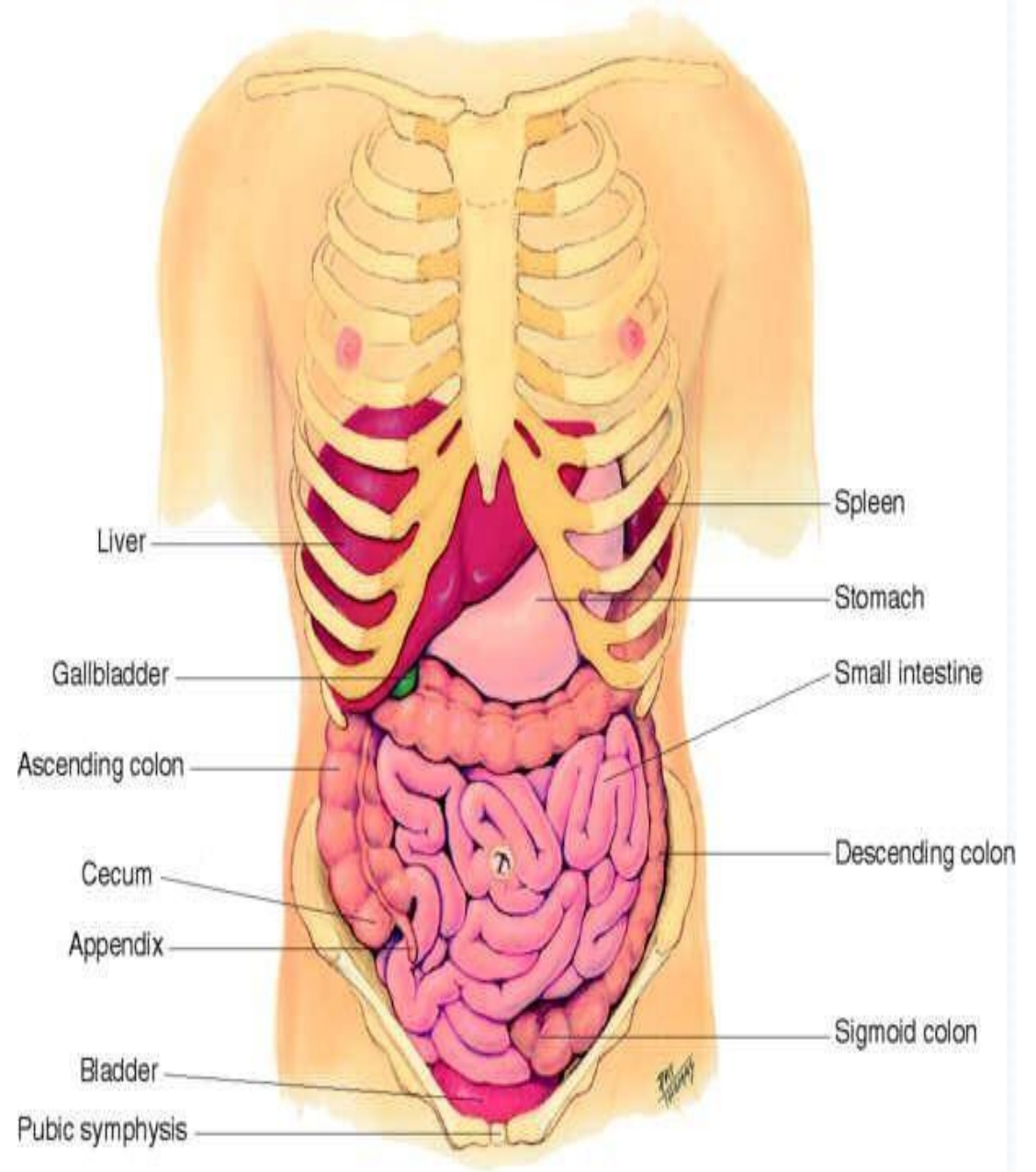
# Abdomen

# Surface Landmarks

**Abdomen** is a large oval cavity **extending from** the diaphragm down to the brim of the pelvis.

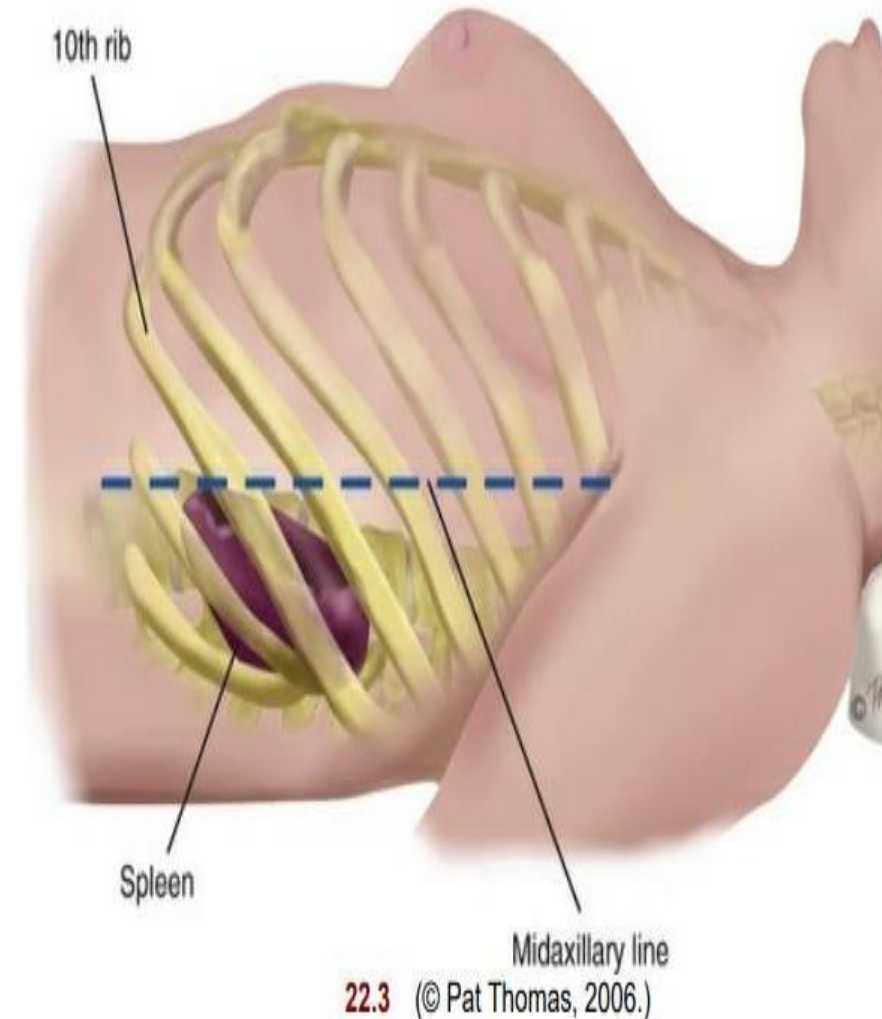
**The stomach** is just **below** the diaphragm, **between** the liver and spleen.

**The gallbladder** rests **under the posterior surface of the liver**, just lateral to the **right MCL**.



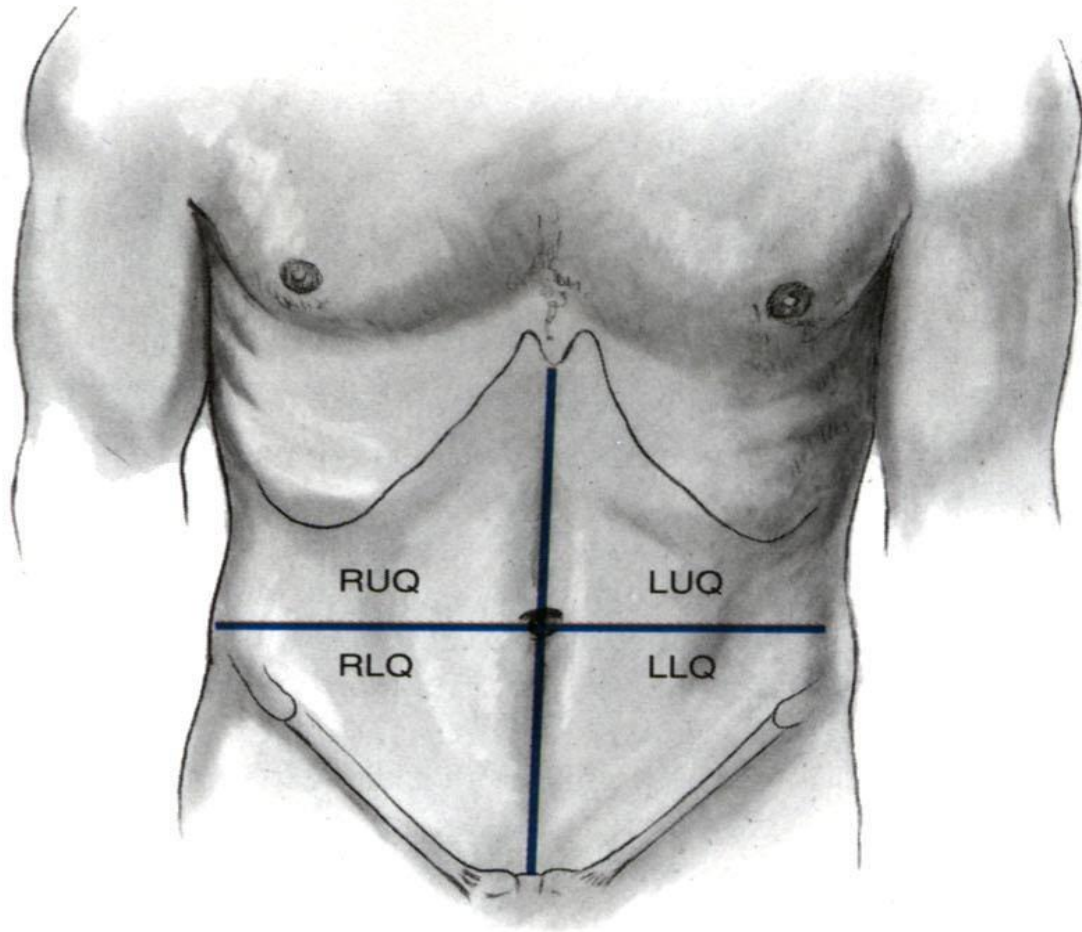
## The Spleen

- a soft mass of **lymphatic tissue** on the **left** posterolateral wall of the abdominal cavity, **immediately under** the diaphragm.
- It lies obliquely with its **long** axis behind and parallel to the **10th rib**, ***lateral to the midaxillary line.***
- Its **width extends** from the 9th to the 11th rib, about 7 cm
- ***It is **not palpable normally.** If it becomes enlarged, its lower pole moves downward and toward the midline.***

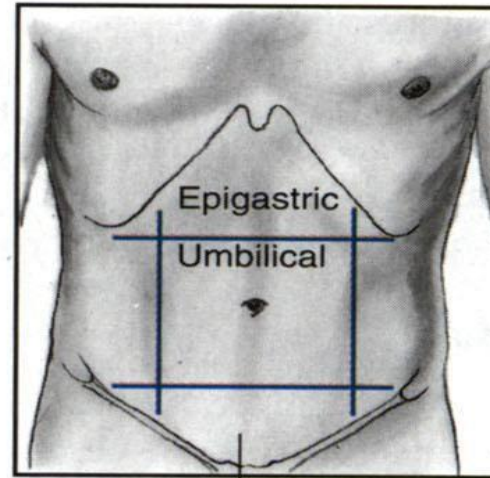


## Four Quadrants of Abdomen

- Abdominal wall is divided into four quadrants



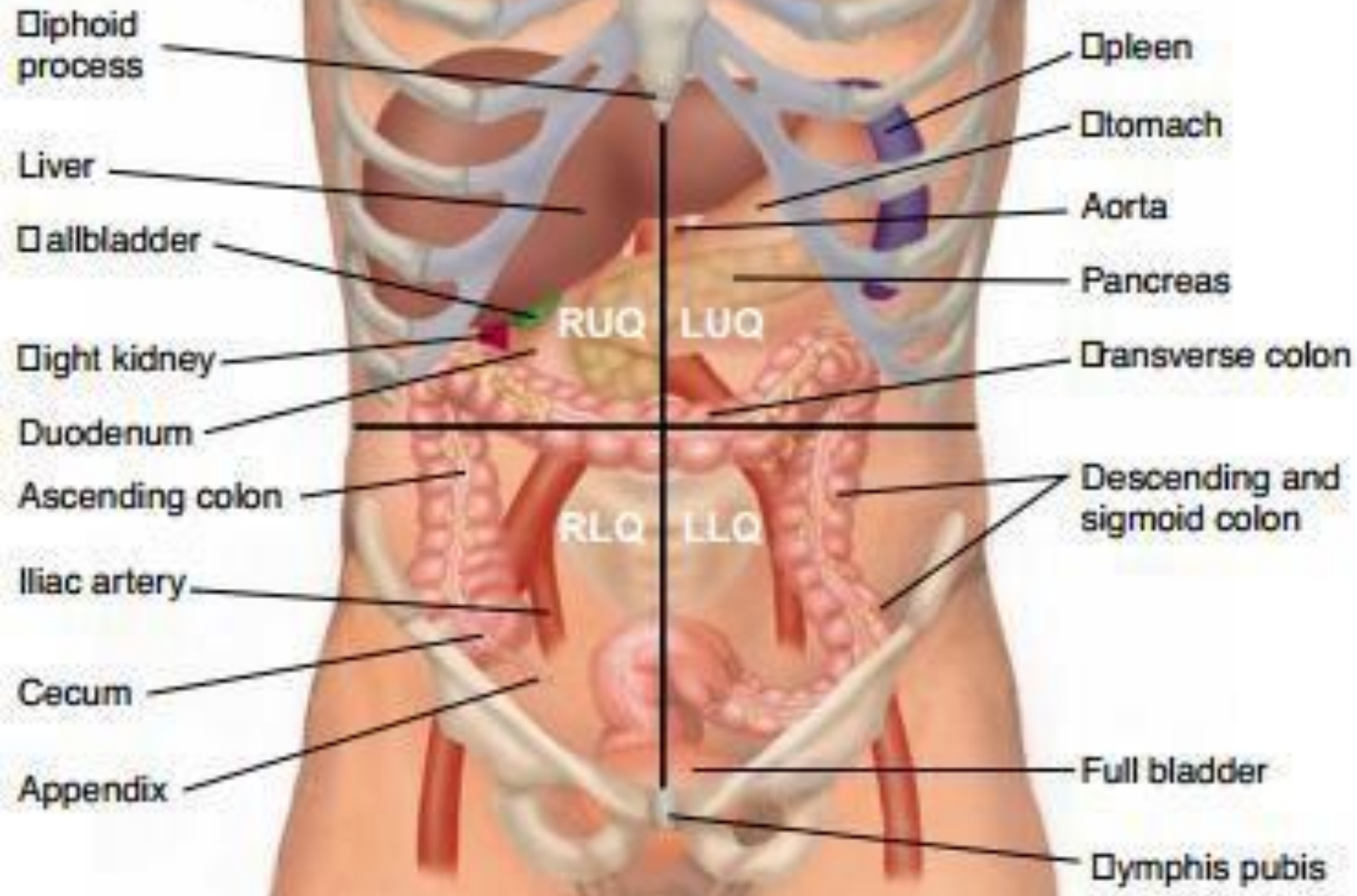
Four quadrants



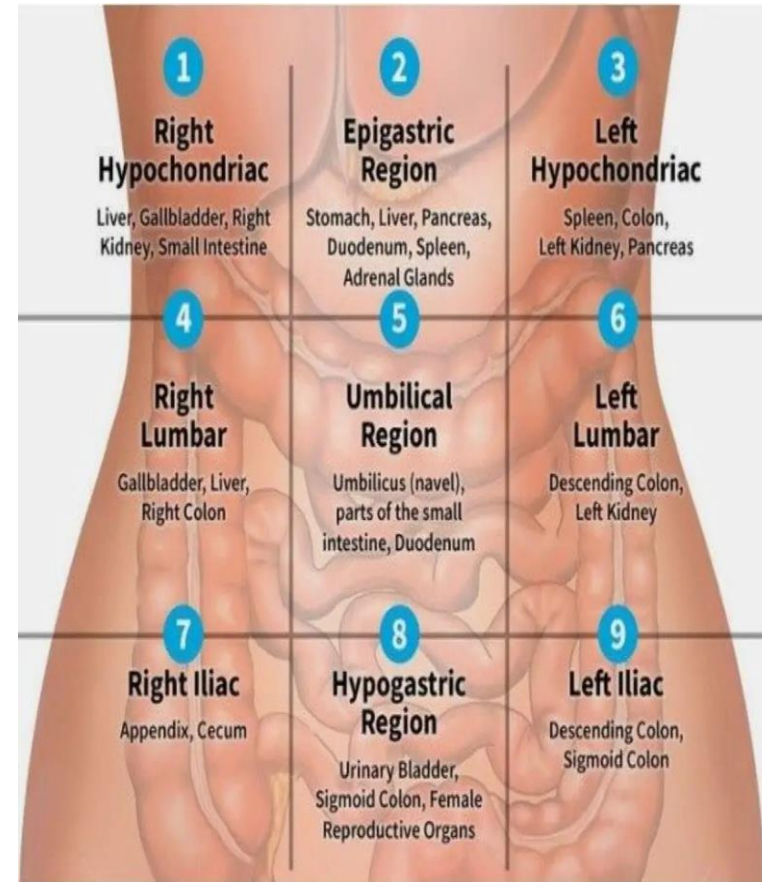
Hypogastric  
or  
Suprapubic

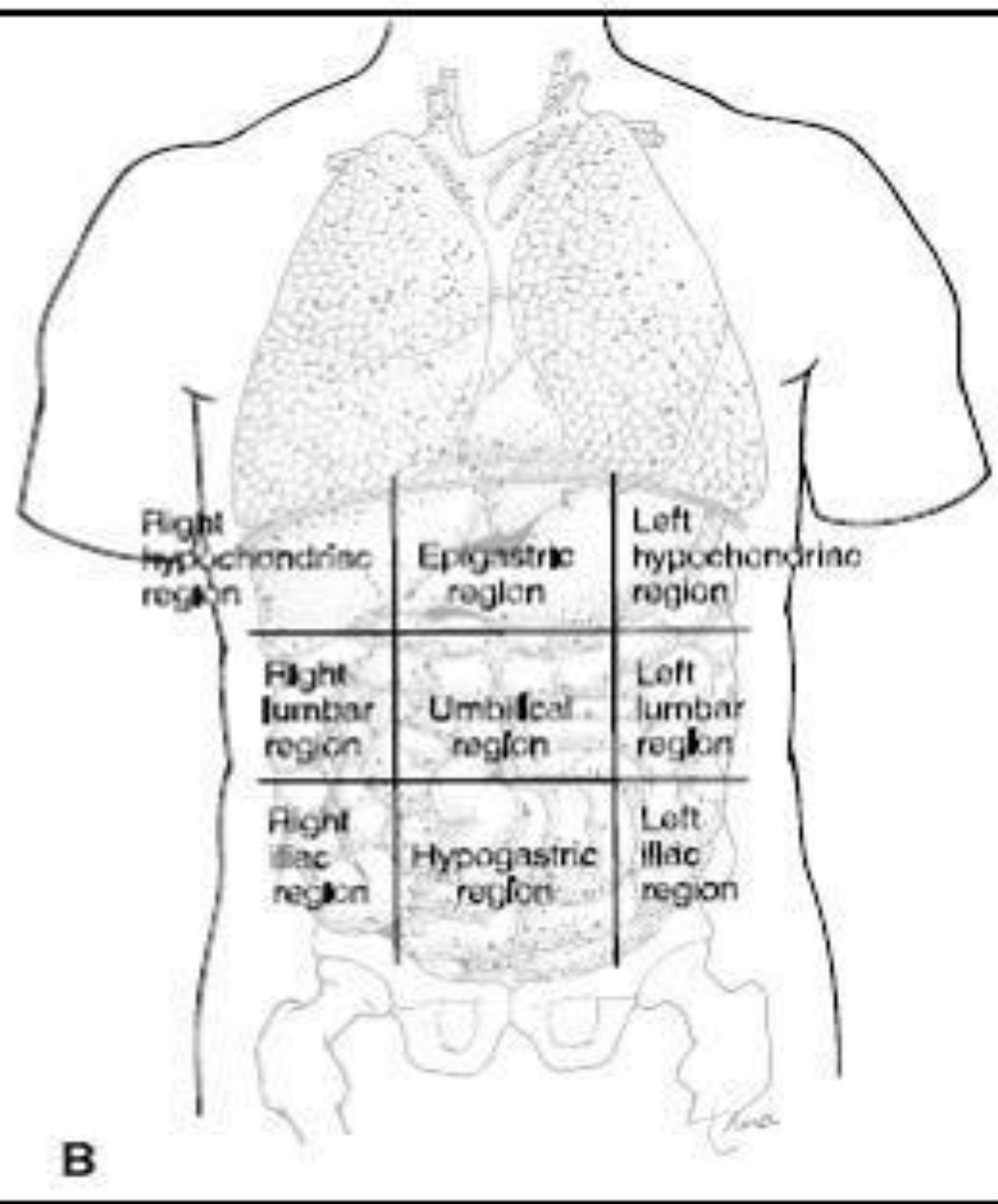
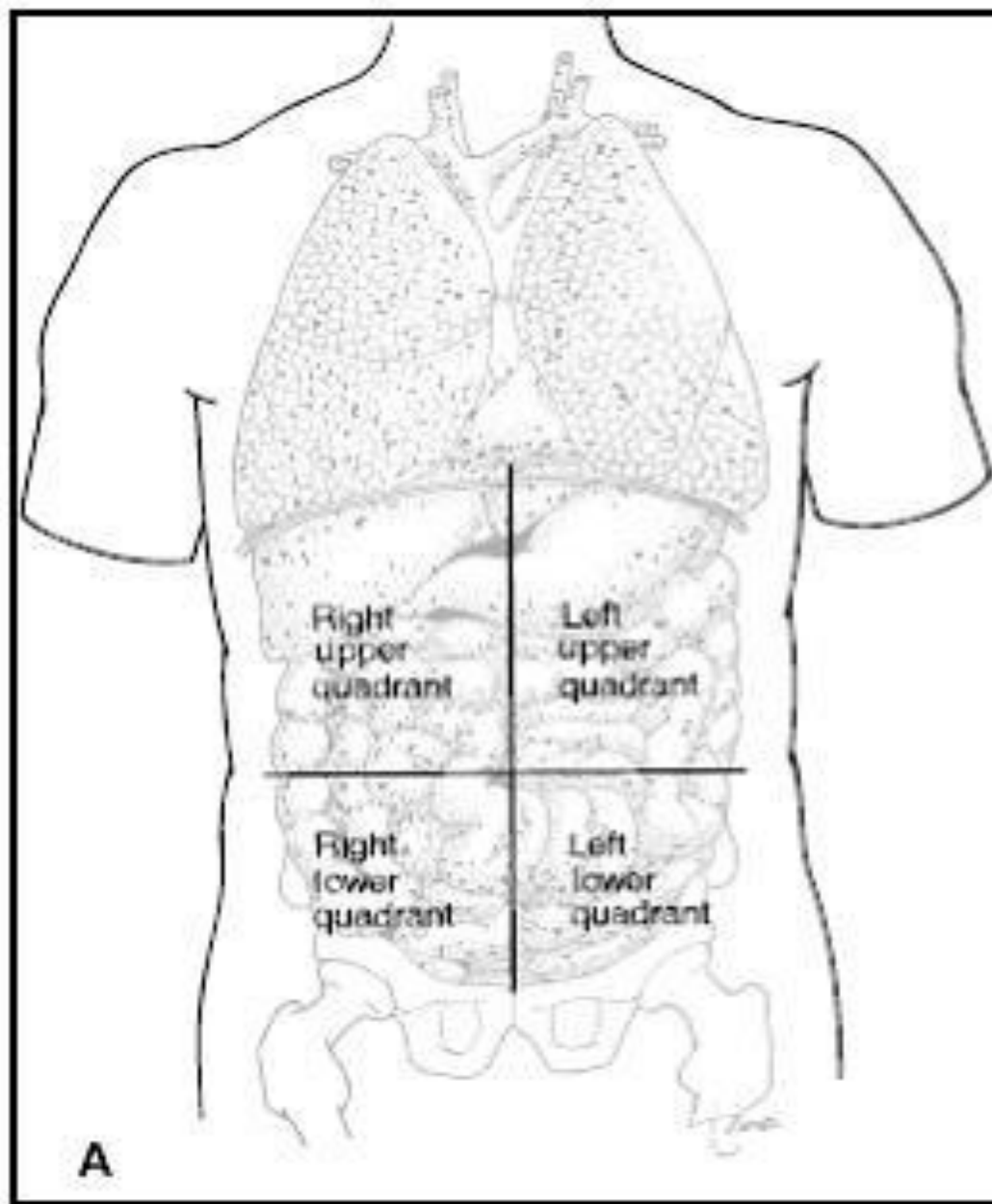
by a vertical  
and a  
horizontal line  
bisecting the  
umbilicus





An older, more complicated scheme **divided the abdomen into nine regions**; and some regional names persist, **such as epigastric** for the area between the costal margins, **umbilical** for the area around the umbilicus, and **hypogastric** or **suprapubic** for the area above the pubic bone.)





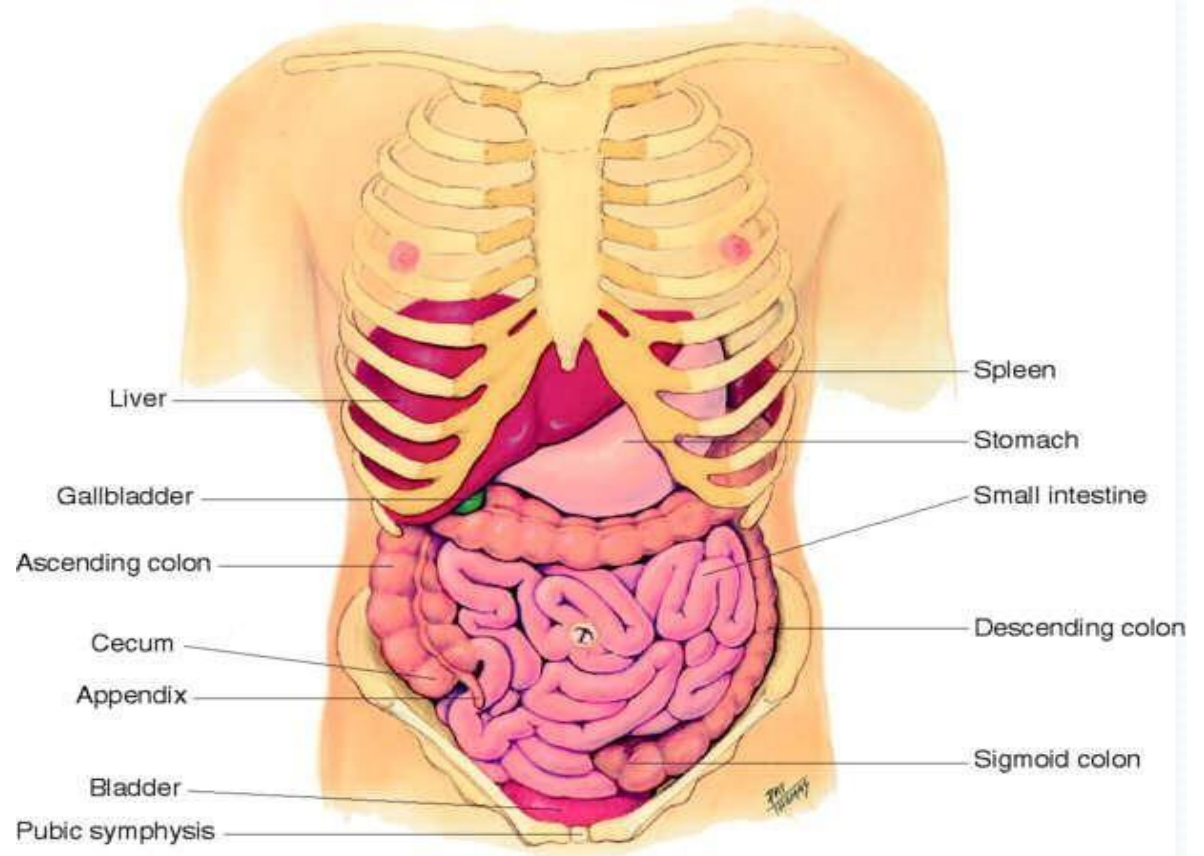
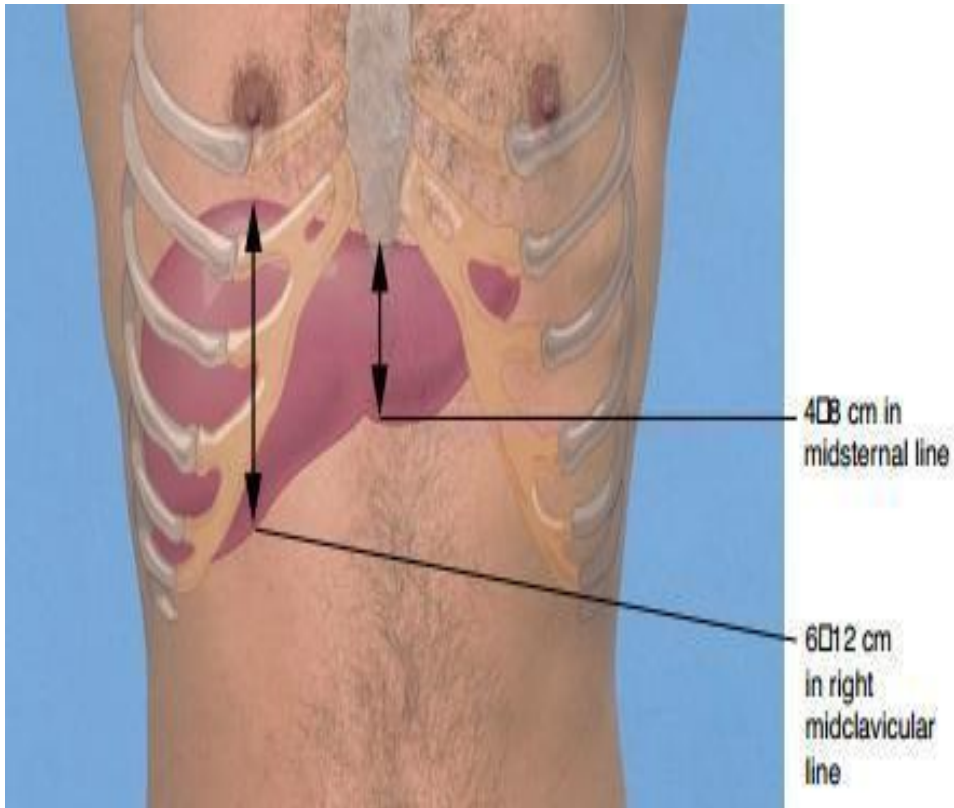
# The anatomic location of the organs by quadrants

| Right Upper Quadrant (RUQ)             | Left Upper Quadrant (LUQ)               |
|----------------------------------------|-----------------------------------------|
| Liver                                  | Stomach                                 |
| Gallbladder                            | Spleen                                  |
| Duodenum                               | Left lobe of liver                      |
| Head of pancreas                       | Body of pancreas                        |
| Right kidney and adrenal               | Left kidney and adrenal                 |
| Hepatic flexure of colon               | Splenic flexure of colon                |
| Part of ascending and transverse colon | Part of transverse and descending colon |
| Right Lower Quadrant (RLQ)             | Left Lower Quadrant (LLQ)               |
| Cecum                                  | Part of descending colon                |
| Appendix                               | Sigmoid colon                           |
| Right ovary and tube                   | Left ovary and tube                     |
| Right ureter                           | Left ureter                             |
| Right spermatic cord                   | Left spermatic cord                     |



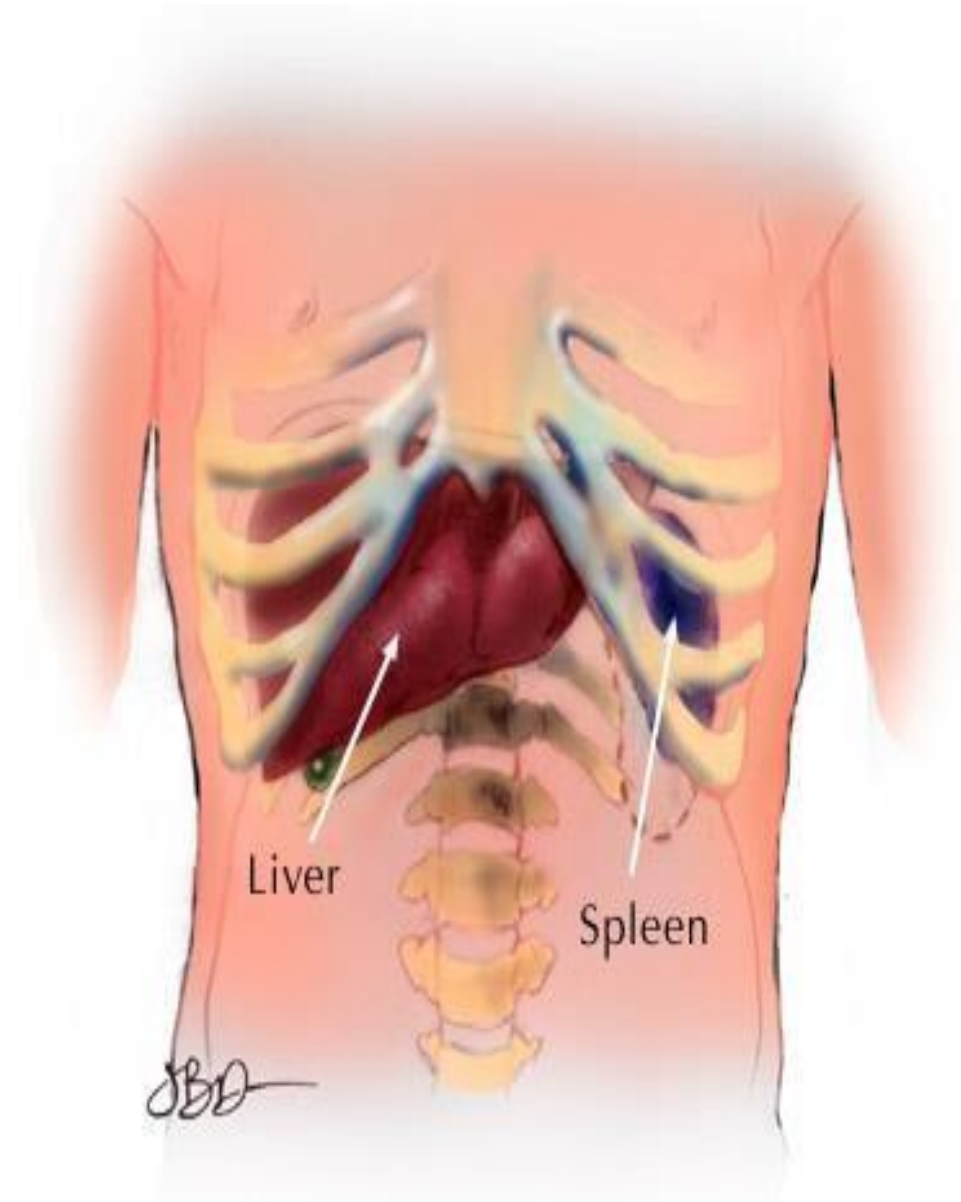
# Internal Anatomy

- All internal organs= the Viscera.
- **Solid** viscera ☐ liver, pancreas, spleen, adrenal glands, kidneys, ovaries, & uterus
- **Hollow** Viscera ☐ stomach, gallbladder, small intestine, colon, & bladder ☐ not palpable



# Internal Anatomy

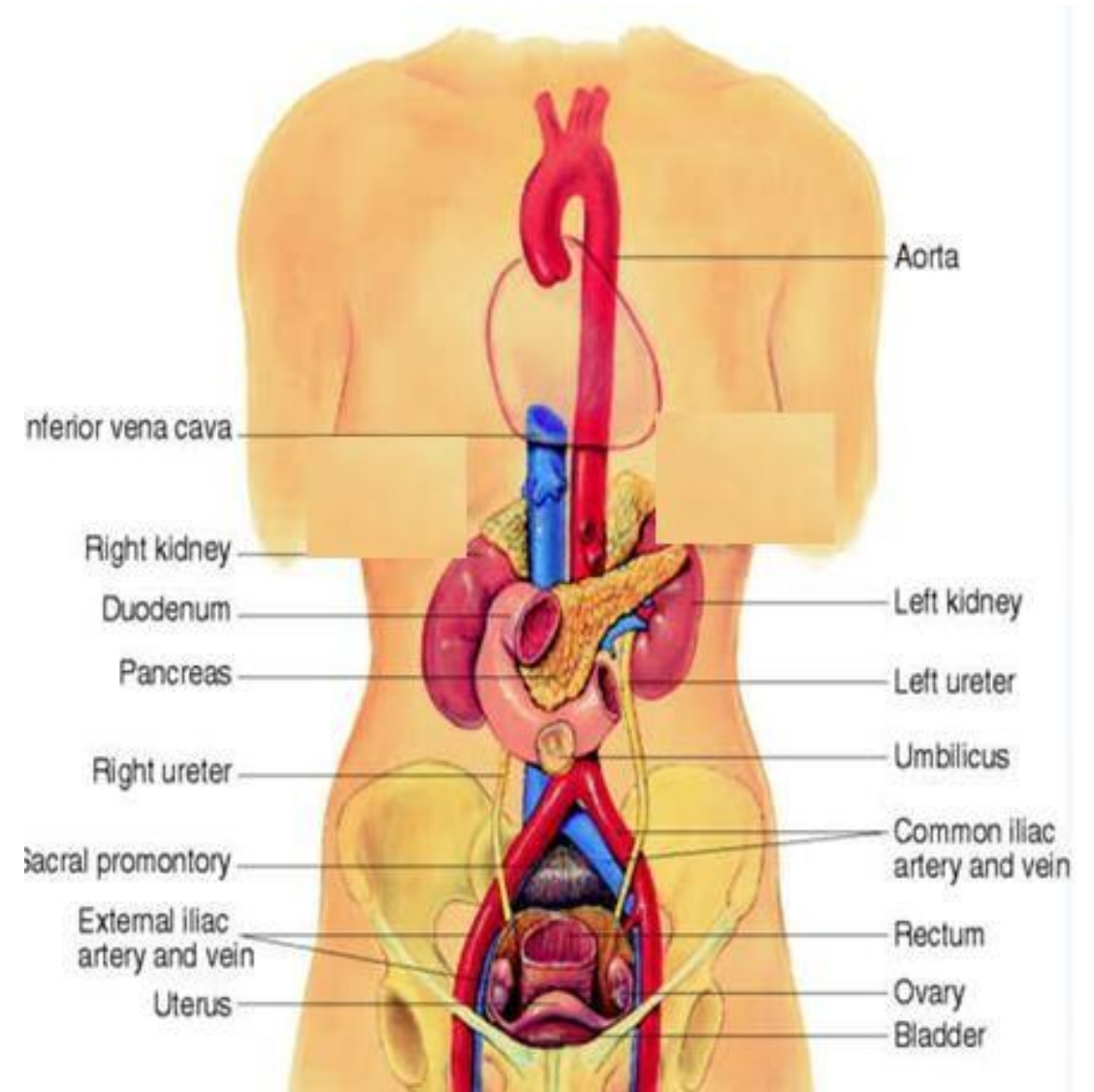
- The **liver** fills most of the **right** upper quadrant (RUQ) and extends over to the **left midclavicular line** (MCL).
- Gallbladder- **under posterior** surface of the liver
- Small intestine- **located in all four** quadrants.



# Internal Anatomy

The **aorta** is just to the **left** of midline in the **upper part of the abdomen**.

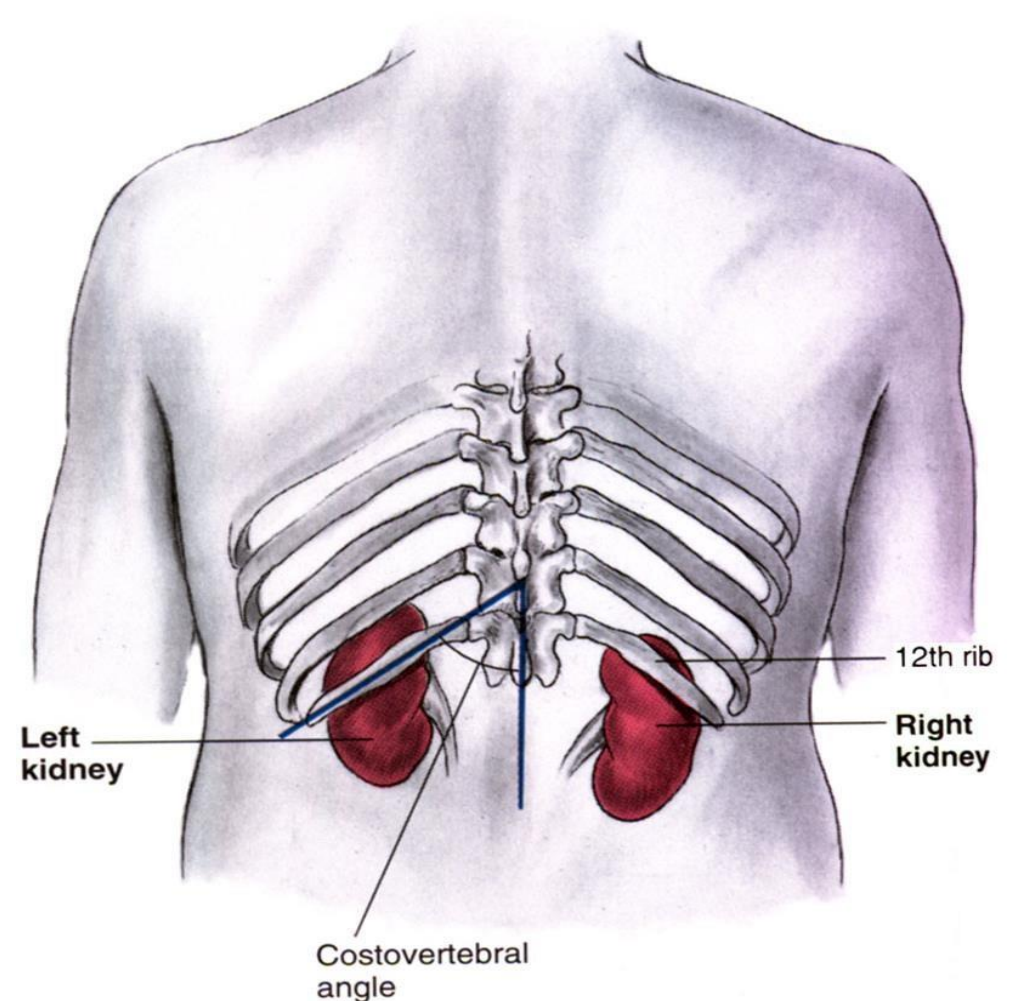
At **2 cm below the umbilicus**, it **bifurcates** into the right and left common **iliac arteries** opposite the 4th lumbar vertebra.



# Internal Anatomy

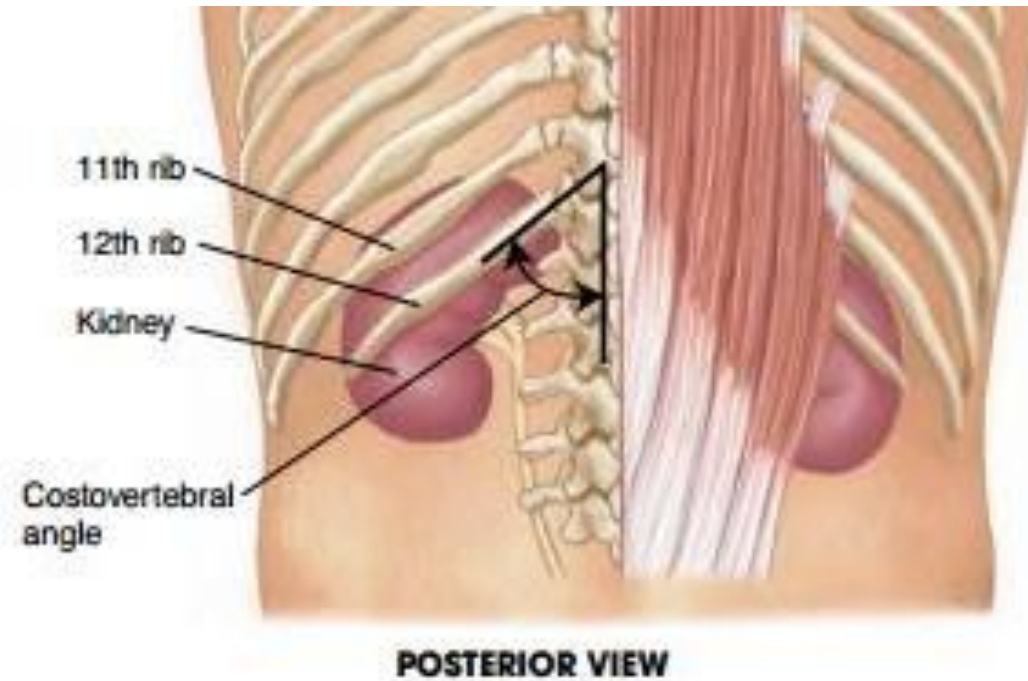
## Kidneys

- The **bean-shaped kidneys** are **retroperitoneal**, or **behind** the peritoneal cavity along the **posterior abdominal wall**.
- The 12th rib forms an angle with the vertebral column, the costovertebral angle
- The **left kidney lies** here at the **11th and 12th ribs**.
- Because of the placement of the liver, the **right kidney rests 1 to 2 cm lower than the left kidney** and sometimes may be palpable.





**The costovertebral angle:** the angle formed by the lower border of the 12th rib and the transverse processes of the upper lumbar vertebrae (for kidney tenderness).



\*Bladder may be palpated in the lower midline (above the symphysis pubis) when it is distended.

# Subjective Data

1. Appetite
2. Dysphagia
3. Food intolerance
4. Abdominal pain
5. Nausea/vomiting
6. Bowel habits
7. Past abdominal history
8. Medications
9. Nutritional assessment

# Subjective Data

## 1. Appetite

- Any **change** in appetite? Is it a loss of appetite?
- Any change in **weight**? How much weight gained or lost? Over what time period? Is the weight loss caused by diet?

## 2. Dysphagia (**Difficulty** in swallowing)

- Any difficulty in swallowing? When did you **first** notice it? Is there any associated **pain**? Any **coughing** or choking when swallowing? **Any worse with liquids versus solids?**

- **Anorexia** is a loss of appetite (some medications, with pregnancy, or with mental health disorders).
- **Dysphagia is difficulty in swallowing.**  
Occurs with
  - Throat or esophagus **disorders**
  - Neurologic changes (e.g., **stroke**)
  - Obstruction (e.g., **tumor**).

# Subjective Data

## 3. Food intolerance

- Are there any **foods** you **cannot eat**? What **happens** if you do eat them: allergic reaction, heartburn, bloating, indigestion? • Do you **use antacids**? How often?
- Food intolerance (e.g., lactase deficiency **resulting in bloating or excessive gas after taking milk products**).
- **Pyrosis** (heartburn), a burning sensation in esophagus and stomach from **reflux** of gastric acid.



# Subjective Data

## 4. Abdominal pain

Any abdominal pain? Please point to it.

- Is the pain in one spot, or does it move around?
- How did it start? How long have you had it?
- Constant, or does it come and go? Occur before or after meals? Does it peak? When?
- How would you **describe** the character: cramping (colic type), burning in pit of stomach, dull, stabbing, aching?

- Abdominal pain may be
  - **Visceral** from an internal **organ** (dull, general, poorly localized)
  - **Parietal** from **inflammation** of overlying **peritoneum** (**sharp**, precisely localized, aggravated by movement) (e.g., appendicitis)
  - **Referred** from a **disorder** in **another site**. gallbladder pain in the shoulder)
- ❖ **Acute pain requiring urgent diagnosis occurs with appendicitis, cholecystitis, bowel obstruction, or a perforated organ.**

# Subjective Data

## 4. Abdomen pain:

Is the pain **relieved by** food or worse after eating?

- Pain of **gastric ulcers** occurs usually on an **empty stomach**.
- Pain of **duodenal ulcers** **occurs 2 to 3 hours after a meal** and is **relieved** by more food

# Subjective Data

## 5. Nausea/vomiting

Any nausea or vomiting? How often? How much comes up? What is the **color**? Is there an **odor**?

- Is it **bloody**?
- Is the nausea or vomiting **associated with** colicky pain, diarrhea, fever, chills?
- What **foods** did you eat in the **past 24 hours**? Where? At home, school, restaurant?
- Is there anyone else in the **family** with same **symptoms** in past 24 hours?

**Hematemesis** (**blood** with vomit) occurs with stomach or duodenal **ulcers** and **esophageal varices**

# Subjective Data

## 6. Bowel habits

- How often do you have a bowel movement?
- What is the color? Consistency? • Any diarrhea or constipation? How long?..
- Any recent change in bowel habits?
- Use laxatives? Which ones? How often do you use them?
- Assess usual bowel habits
- Black stools may be tarry due to occult blood (melena) from GI bleeding or nontarry from iron medications.
- Red blood in stools occurs with GI bleeding or localized bleeding around the anus (e.g., hemorrhoids)
- Ask about the color of the stools (white or grey stools can indicate liver or gallbladder disease)

# Subjective Data

## 7. Past abdominal history

## 8. Medications

Which **medications** are you **taking** currently?

- How about alcohol—how much would you say you drink each day? Each week?
- How about cigarettes—do you smoke? How many packs per day? For how long?

## 9. Nutritional assessment (a 24-hour recall)



# *Objective data*

## *Preparation*

- ✓ **Lighting:** The lighting should include a strong overhead light and a secondary stand light.
- ✓ **Privacy**
- ✓ **Enhancement of abdominal wall relaxation**  
(how?)

## *Equipment needed*

- Stethoscope
- Ruler (cm)
- Skin-marking pen
- Alcohol wipe

# Objective Data

## Preparation:

- **Expose** the abdomen so that it is fully visible. **Drape** the genitalia and female breasts.
- **The following measures enhance abdominal wall relaxation:**
  - ✓ Ensure that the patient has an **empty bladder**.
  - ✓ Put the patient comfortable (relaxed) in a **supine** position
  - ✓ Patient **arms at the sides or folded across** the chest
  - ✓ With palpation
  - ✓ **Ask the patient to point to any areas of pain** so you **examine** these areas **last**
  - ✓ **Warm** your hands and stethoscope (To avoid abdominal tensing)
  - ✓ Approach the **patient calmly** and avoid quick, unexpected movements
  - ✓ **Warm** room → avoid chilling and tensing muscles.
  - ✓ learn to **use distraction**: Enhance muscle relaxation **through** breathing exercises; emotive imagery.

# *Order for Abdominal Exam?*

**Inspect**

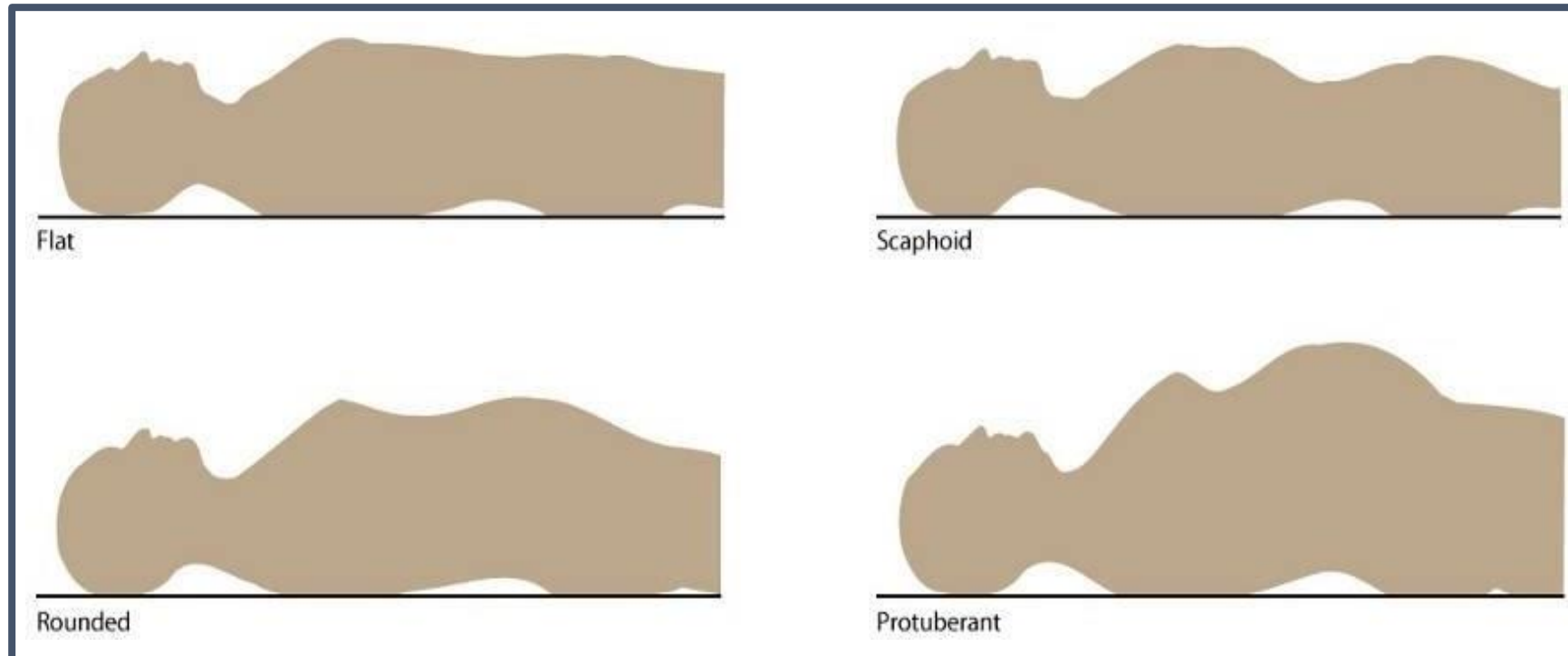
**Auscultate**

**Percuss**

**Palpate**

# Inspect the Abdomen

1. **Contour**: Stand on the person's right side and look down on the abdomen. Then sit to gaze across the abdomen. Determine the profile **from the rib margin to the pubic bone**. The contour **describes** the nutritional state and **normally ranges** from flat to rounded



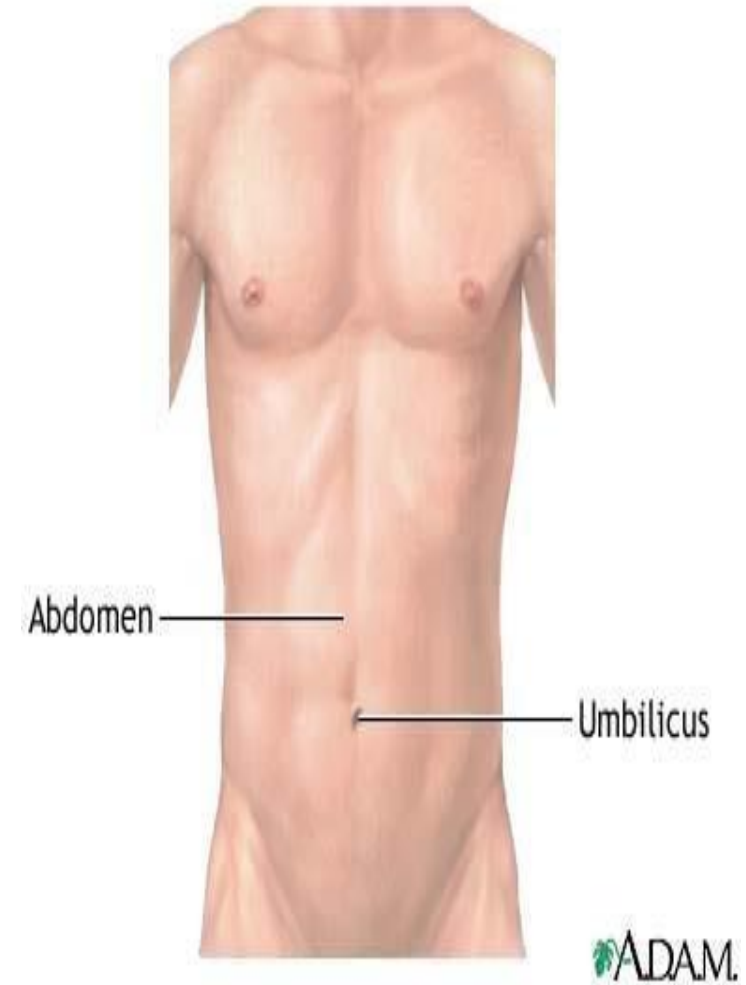
## 2. Symmetry

- Shine a light across the abdomen toward you or lengthwise across the person.
- The abdomen should be symmetric bilaterally.
- Ask the person to take a deep breath to further highlight any change. The abdomen should stay smooth and symmetric.

# Inspect the Abdomen

## 3 Umbilicus

Normally it is **midline and inverted**, with **no sign** of discoloration, inflammation, or hernia. It becomes **everted and pushed upward with pregnancy**





# Skin

even color, **no** redness, jaundice, no lesion.

One common **pigment change** is **Striae** (**Stretch marks**).

- Silver striae (old)
- Pink-purple(recent).

➤ **Common in** pregnancy or excessive weight gain.

- **Pigmented nevi** (moles) are common on the abdomen.
- Normally **no lesions** are present, although you may note well-healed **surgical scars**. If a scar is present, draw its location in the person's record, indicating the **length in centimeters**

# Striae



## 5. Pulsation or Movement

- Normally you may see the pulsations from the aorta beneath the skin in the epigastric area, particularly in thin people with good muscle wall relaxation.
- Respiratory movement also shows in the abdomen, particularly in males.
- Finally, waves of peristalsis sometimes are visible in very thin people. They ripple slowly and obliquely across the abdomen

## 6. Demeanor

- A comfortable person is relaxed quietly on the examining table and has a benign facial expression and slow, even respirations.

# Auscultate Bowel Sounds and Vascular Sounds

- Auscultate the abdomen next **because** percussion and palpation **can increase peristalsis, which would give a false interpretation of bowel sounds.**
- Use the **diaphragm** endpiece **because** bowel sounds are relatively **high pitched.**
- Hold the **stethoscope** **lightly** against the skin; **pushing too hard** may **stimulate** more bowel sounds.
- **Begin in the RLQ** at the **ileocecal valve** area **because** bowel **sounds** normally are always **present** here.
- Auscultate in a **clockwise fashion** in each of the **four** quadrants

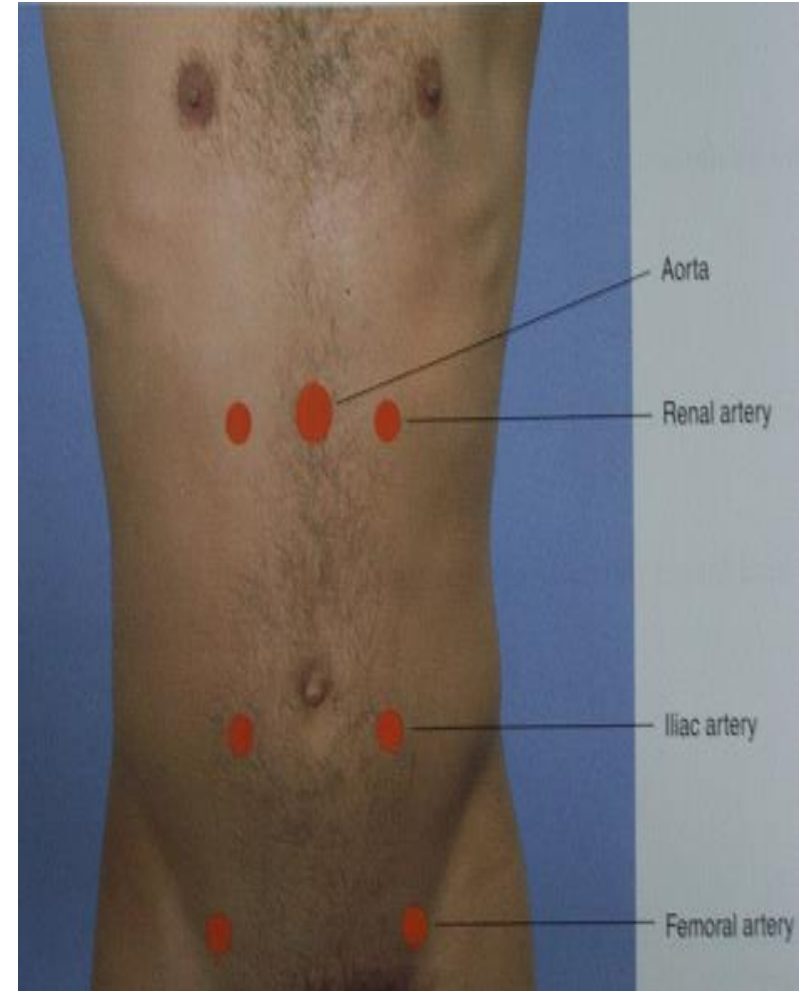


# Bowel sounds

- Note the character and frequency of bowel sounds.
- **Normal bowel sounds** are high-pitched, gurgling, cascading sounds, occurring irregularly anywhere from 5 to 30 times per minute.
- Just judge if they are **present** or are **hypoactive** or **hyperactive**
- A perfectly “silent abdomen” is uncommon; you must listen for **5 minutes** by your watch **before deciding** whether bowel sounds are completely **absent**.

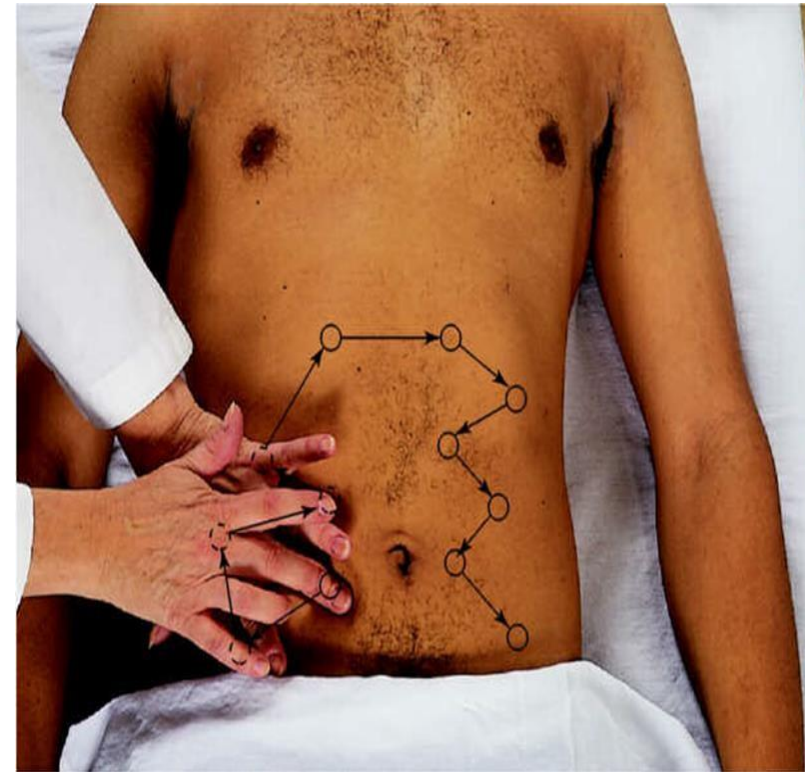
# Vascular Sounds

- As you **listen** to the abdomen, note the presence of any **vascular sounds** or **bruits**. that **result from** turbulence **caused by** stenoses or aneurysm
- best **heard** with the **bell** of the stethoscope
- Check over (1) the aorta, (2) renal arteries, (3) iliac, and (4) femoral arteries. **Normally no Bruit.**



# Percussion

- Percuss to **assess** (1) the relative **density** of **abdominal contents** and to (2) screen for **abnormal fluid** or masses.
- **General Tympany**
  - First **percuss** lightly in **all four quadrants** to determine the prevailing amount of tympany and dullness
  - Move clockwise.
  - **Tympany** should predominate **because** air in the **intestines** rises to the surface when the person is supine.





# Costovertebral Angle Tenderness

- Place one hand over 12<sup>th</sup>. rib at the Costovertebral angle on the back
- Strike the hand with ulnar edge of the other fist
- Normal: feels a thud with no pain
- Abnormal findings: Sharp pain occurs with inflammation of the kidney.

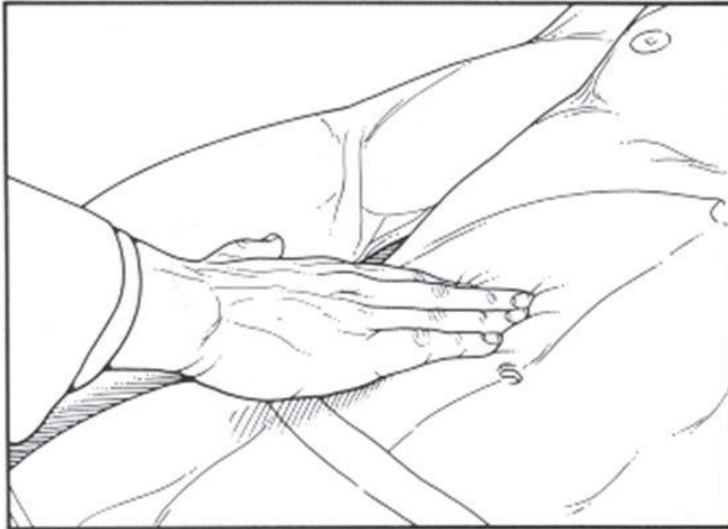


# Palpate Surface and Deep Areas

- Perform palpation **to judge** the **size, location, and consistency of certain organs and to screen for an abnormal mass or tenderness.**
- Because most people are naturally inclined to protect the abdomen, you need to use additional *measures to enhance complete muscle relaxation*
- **Bending knees.**
- Keeping your **hand low & parallel** to abdomen.
- **Teach the person to breathe slowly** (in through the nose and out through the mouth).
- **Keep your own voice low and soothing.** Conversation may relax the person.
- **Use patient's hand.** people are not ticklish to themselves. keep the person's hand under your own with your fingers curled over his or her fingers
- **Perform palpation after auscultation.** palpating as you pretend to auscultate

# Light and Deep Palpation

- **Begin** with **light** palpation.
- With the first four fingers close together, **depress the skin about 1 cm.**
- Make a **gentle rotary motion**, sliding the fingers and skin together.



- Lift the fingers (**do not drag them**) and **move clockwise to the next location around the abdomen.**
- The **objective** here is not to search for organs but to ***form an overall impression of the skin surface and superficial musculature.***
- ***Save the examination of any identified tender areas until last. This method avoids pain and the resulting muscle rigidity that would obscure deep palpation later in the examination***

- Deep Palpation

Using the technique described earlier but **push down about 5 to 8 cm.**

- **Move** clockwise
- Use **bimanual** technique for obese person.
- With either technique note the location, size, consistency, and mobility of any palpable organs and the presence of any abnormal enlargement, tenderness, or masses.



# Deep Palpation

- If you identify a mass note the following:
  - Location
  - Size
  - Shape
  - Consistency (soft, firm, hard)
  - Surface (smooth, nodular).
  - Mobility (including movement with inspiration)
  - Pulsatility
  - Tenderness

# Palpate the liver

- Place your **left hand under** the person's **back** parallel 11<sup>th</sup>-12<sup>th</sup> ribs and lift up **to support** the abdominal contents
- Place your **Right Hand on the RUQ**, with fingers **parallel** to the midline.
- **Push deep down** and under the right costal margin
- Ask the person to **breathe slowly**
- It is **normal to feel the edge of the liver bump your fingertips** as the diaphragm pushes it down during inhalation

- **Normal: Firm & regular liver edge**
- Often the **liver is not palpable** and you feel nothing firm



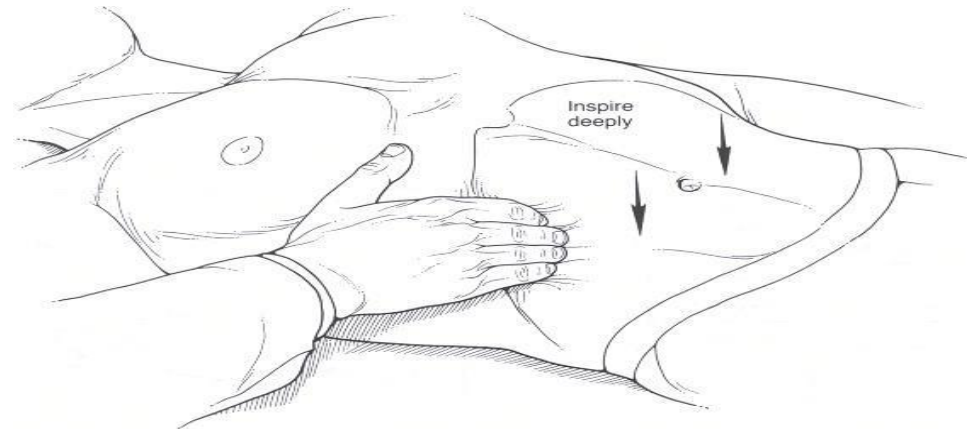
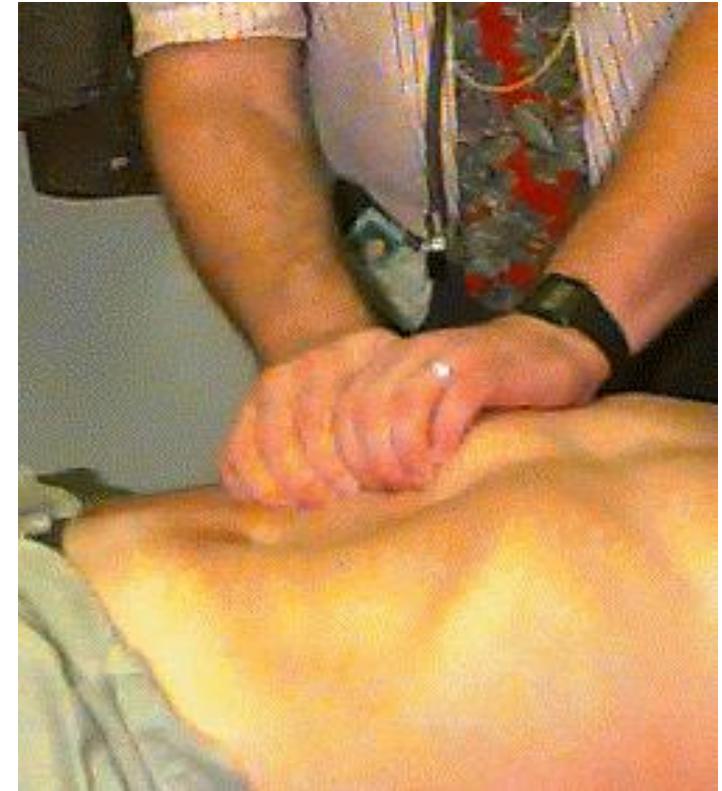


# Palpate the liver

- **Hooking Technique**

- **Stand** up at the person's **shoulder**
- Rotate your body to the right so that **you face the person's feet.**
- Hook your fingers **over the costal margin** from above
- **Ask the person to take a deep breath.**
- Try to **feel the liver edge** bump your fingertips.

**Normal: Firm & regular liver edge**





# Palpate the spleen

- Normally the spleen is not palpable and must be enlarged 3 times its normal size to be felt.
- Reach your left hand over the abdomen and behind the left side at the 11th and 12th ribs.
- Lift up for support
- Place your right hand obliquely on the LUQ with fingers pointing toward the left axilla and just inferior to the rib margin.



# Palpate the spleen

- Push your hand deeply down and under the left costal margin
- Ask the person to take a deep breath.
- You should feel nothing firm.
- Imaging by ultrasound is more precise



# Palpate the right kidney

- Place your hands together in a “duck-bill” position at the person’s right flank
- Press your two hands together firmly.
- Ask the person to take a deep breath
- **Normal:** In most people, you will feel no change. Occasionally you may feel the lower pole of the right kidney as a round, smooth mass that slides between your fingers.



# Palpate the left kidney

- Reach your left hand across the abdomen and behind the left flank
  - Push your right hand deep into the abdomen and ask the person to breathe deeply.
  - You should feel no change with the inhalation
- 
- The left kidney sits 1 cm higher than the right kidney and is not palpable normally



# Palpate the Aorta

Using your **opposing thumb and fingers**, palpate the aortic pulsation **in the upper abdomen slightly to the left of midline.**

**Normally** it is 2.5 to 4 cm **wide** in the adult and **pulsates** in an anterior direction.

# Special Procedures: / Ascites

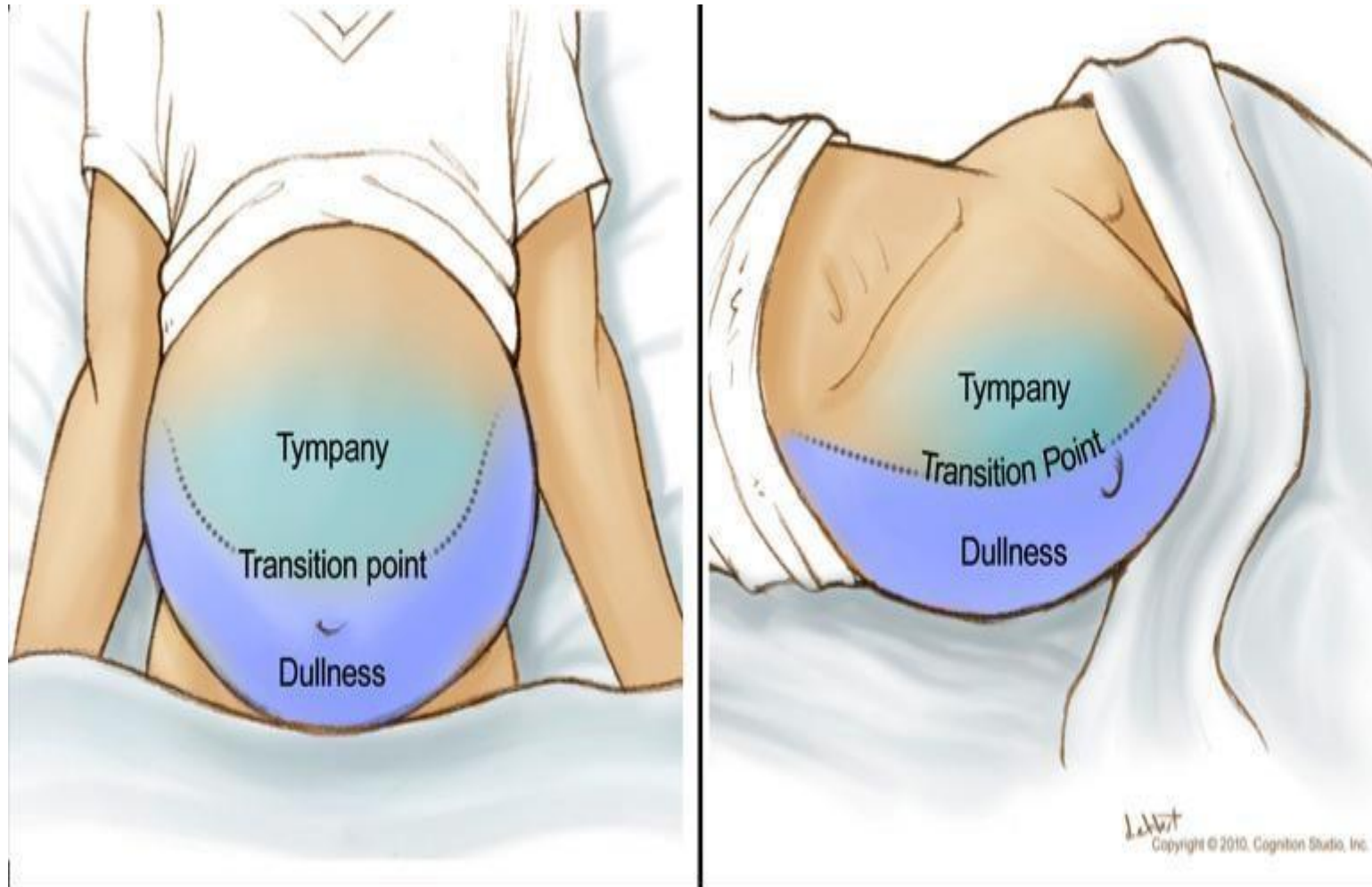
## 1. Shifting Dullness

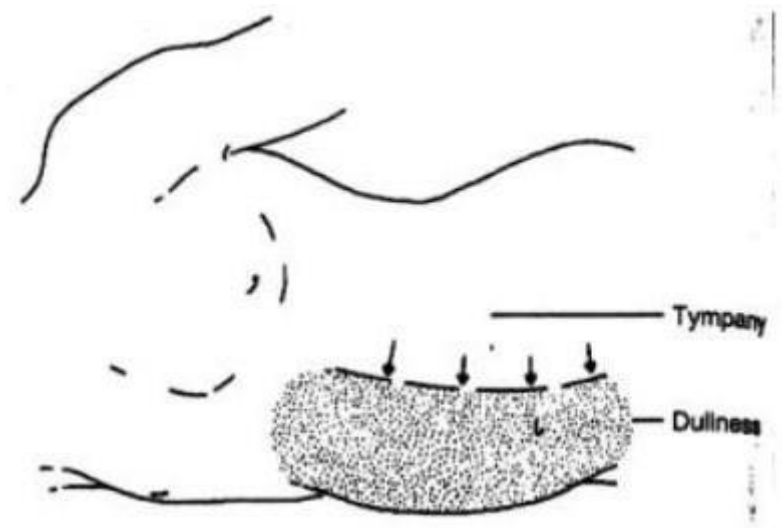
- In a **supine person** ascitic **fluid** settles by gravity into the **flanks**, displacing the **air**-filled bowel to the periumbilical space.
- You will hear a **tympanitic** note as you percuss over the **top** of the abdomen **because** gas-filled intestines float over the fluid. Then **percuss down the side** of the abdomen.
- If fluid is present, the note will **change from tympany to dull** as you reach its level.
- **Mark this spot.**

- Now **turn** the person onto the **right side** (roll him or her toward you)
- The **fluid** will gravitate to the **dependent** (in this case, right) **side**, displacing the lighter bowel upward.
- Begin **percussing** the **upper** side of the abdomen and **move downward**.
- The sound **changes from tympany to a dull sound** as you reach the fluid level; but this time the level of dullness is higher, upward toward the umbilicus.
- This shifting level of **dullness indicates the presence of fluid.**



# Shifting Dullness





# Special tests: / Ascites

- **Fluid Wave**

- Differentiate ascites from gaseous.
- Place the person's **hand** on his **abdomen** in the **midline**.
- Place your **left hand** on the person's **right flank**.
- With your **right hand** give the **left flank** a firm strike.

Normal: **Negative**

Abnormal: Positive( generate a **fluid wave** )



# Special Tests

## Inspiratory Arrest (Murphy Sign)

- In a person with inflammation of the gallbladder (**cholecystitis**), pain occurs.
- Hold your **fingers under the liver** border.
- Ask the person to **take a deep breath**.
- A **normally** *complete deep breath* **without pain.**
- **Abnormal:** The person **feels a sharp pain** and abruptly **stops** inspiration midway

# *Special Tests*

## **Rebound tenderness:**

Choose **a site remote from** the painful area

Hold your **hand 90 degrees** to the abdomen

**Push** down slowly and deeply **then lift up quickly.**

**A normal, or negative, response is no pain on release of pressure**

- The pain is caused by rapid movement of the **inflamed peritoneum**
- Perform this test at the end of the examination because it can cause severe pain and muscle rigidity

# Other Special Tests-Appendicitis

## ➤ Rovsing sign

- **Pressure** on the LLQ of the abdomen **causes pain in the RLQ** which suggests appendicitis (a positive Rovsing's sign).

## ➤ Iliopsoas Muscle Test:

- With the person **supine**, **lift the right leg straight up**, **flexing** at the hip. **Push down** over the lower part of the right thigh as the **person tries to hold the leg up**.
- **When the test is negative, the person feels no change.**
- when there is **appendicitis**, **pain** is felt in the **RLQ**



# Special Tests-Appendicitis

**Obturator Test:** Flex the person's right thigh at the hip, with the knee bent. Hold his or her ankle, and rotate the leg internally and externally.

Normally: There should be no pain in RLQ

This maneuver stretches the internal obturator muscle.

